Explaining the Decline of the Male Advantage in Academic Promotion: A Mixed Age–Cohort–Period Approach.

In a context of growing incentives to attract and retain more women in research and innovation, career progression is a key issue. During the last two decades, the “leaky pipeline” has been a growing concern for research institutions and policy makers. In most Western countries, women tend to outperform men in high school, but their proportion drops progressively at the MA level, then again at every major step of the scientific career (SHE Figures, 2024). Research about these issues focused sometimes on the early career period (e.g. Heinrichs & Sonnabend 2022) or on specific factors like sexism (Spoon et al., 2023), maternity (Martinez et al., 2007) or the gendered dimension of excellence (Dubois-Shaik et al., 2019).

In order to reduce these inequalities, structural policies and formal requirements have been implemented at the European and national level, often taking the form of a Gender Equality Plan (“GEP”, Tardos et al., 2025), contributing in the narrowing of the gender gap in scientific careers, and consequently the gender wage gap. This communication will investigate a less studied phenomenon, i.e. is the promotion from junior (rank B) to senior position (rank A), which is a key step in career progression and access to decision making positions.

We will analyse longitudinal HR data of the permanent researchers of a large French public research centre (several thousand permanent researchers) from 2009 to 2024. Overall, in this centre the gender gap in career progression is narrowing, with the share of women at rank A (senior position) gradually catching up with that of male researchers.

However, a closer look at the data reveals a more nuanced picture. The research centre comprises 10 disciplinary or thematic institutes. The promotion is competitive and limited to a fixed number of positions each year (the number depends on exogenous national regulations). According to the yearly public HR report, the mean age at promotion varies by field (lower in mathematics, higher in social sciences and humanities), but there is also a gender age gap at promotion in each institute, either in favour of men or women. This emphasis on the age at promotion points to a single factor explaining the female lag in promotion to rank A. At the same time, data show a narrowing of the gender gap at rank A, which may imply a more complex interplay of explanatory factors (Nielsen, 2015).

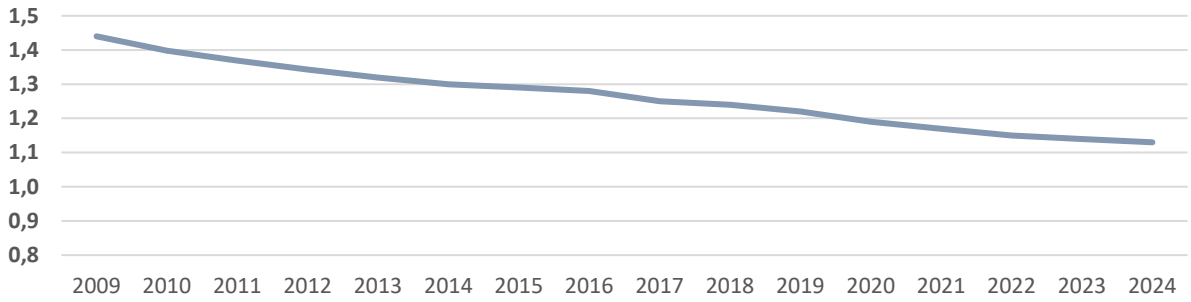
How did the career progressions of men and women during the last 15 years? What are the main factors explaining this evolution? Are they more field related, or gender related? Did institutional policies lead to an acceleration of the gap narrowing for all the institutes? If so, do is affect some cohorts in particular, or any cohorts in a specific period? On the contrary, is there a more prevalent age effect? Considering the overall differences in the promotion of men and women, one must articulate the age-cohort-approach to a gendered-focussed one (Acker, 1990). As the institutional policies decided at directorial level affect the entire centre, disparity among the 10 branches (scientific fields) points to field-specific cultural differences (see van Veelen & Derks, 2022).

The main research hypotheses are:
H0: The share of women at rank A converges toward that of the men (i.e. the “male advantage declines)
H1: the gender age gap at promotion level tends to narrow, particularly through earlier promotions of women.

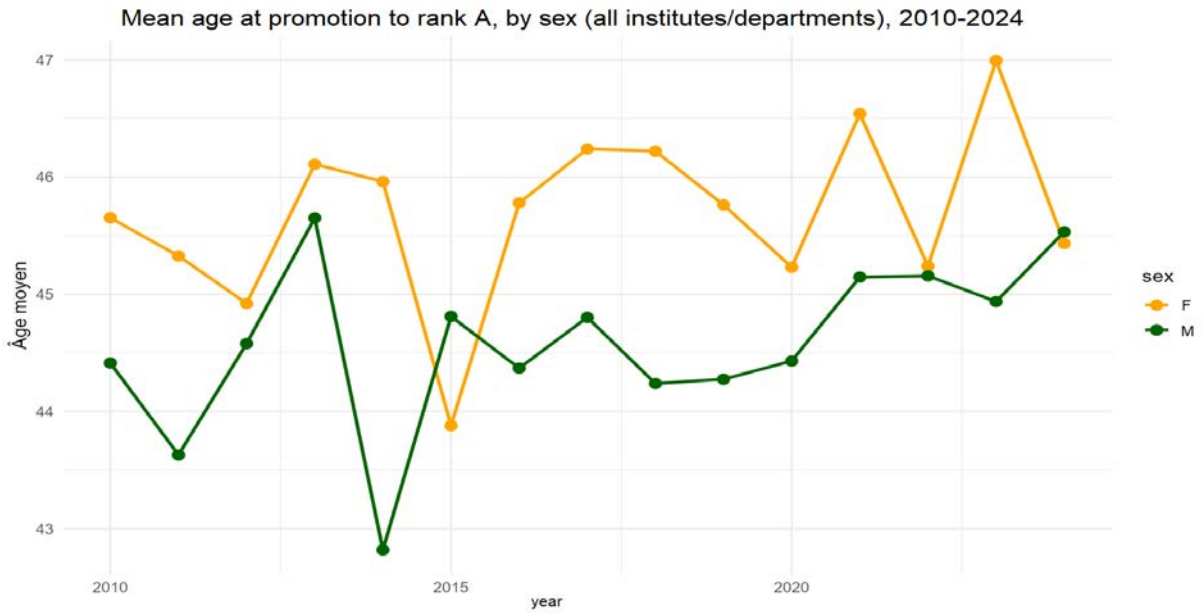
H2: Women's promotion rates are increasingly higher than men's.
H3: Institutional policies generate a measurable period effect in gendered promotions.
H4: Inter-institute variance is strong, making institute-level analysis necessary.

H0 is confirmed. The male advantage (defined as the ratio of the share of rank A among male researchers by the share of rank A among the female researchers) gradually declines in the research centre (fig. 1).

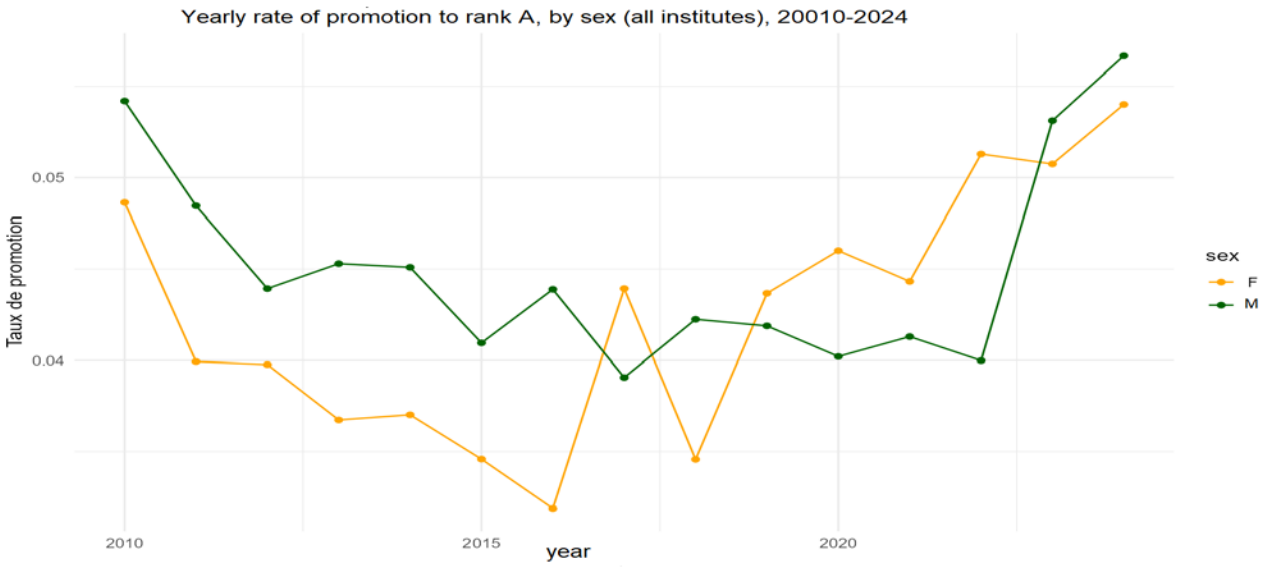
Fig. 1. Male advantage, 2009-2024



H1 is NOT confirmed. The age at promotion tends to increase for both sexes (fig. 2). Even though the gender gap varies drastically from one year to the other, overall the mean age of the women promoted is higher than that of the men promoted.



H2 is *partly* confirmed, depending on the period considered. The rate of promotion by sex evolves considerably over the period (defined as the percentage of rank B individuals promoted to rank A). Despite a similar trend for both sexes, there is an important gender gap most for most of the years (fig. 2). But contrary to the age-gap at promotion which evolved erratically, the promotion rate shows a change of trend in 2017. The narrowing gap in the early period requires another explanation.

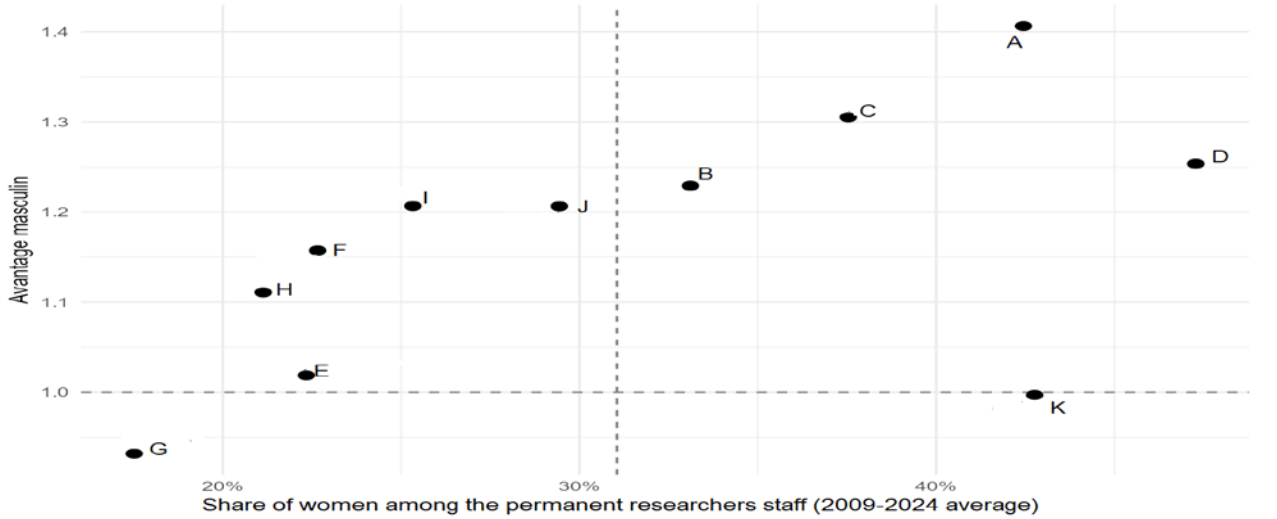


H3 is confirmed. In the 2009-2016 period, the overall yearly promotion rate to rank A is systematically higher for men, which is no longer the case in the 2017-2024 period (table 1). The average promotion rate of the women is higher than that of the men in the 2017-2024 period.

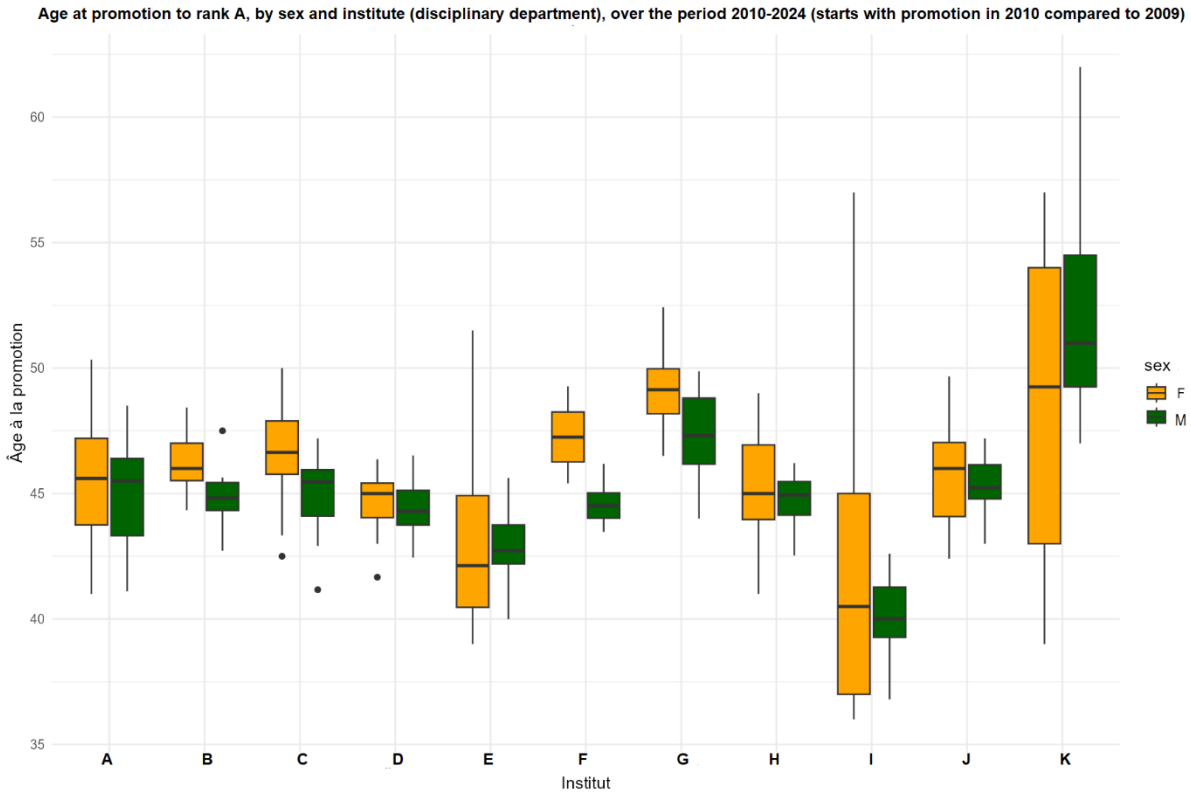
Table 1. Average of the annual promotion rate by sex.

	Female	**Male**
Generation		
Born before 1970	0.01985434	0.01334067
Born in 1970 or later	0.02960170	0.03171692
Cohort (year of recruitment)		
Cohort 2010	0.05225264	0.05269171
Cohort 2015	0.03126999	0.04111339
Period		
2009-2016	0.03505646	0.03956206
2017-2024	0.04944030	0.04352239

H4 is confirmed. Vertical segregation is highly corelated to the share of female researchers, as this figure shows (fig. 4, male advantage vs. share of women in the workforce).



This may imply a trade-of between the need to retain women when are in the minority and preserving a male dominance when attracting women in not an issue. Nevertheless, the situation is more complex, as show the boxplots of the age at promotion by sex and institute (fig. 5).



Regressions and other data analysis will underline the necessary mixed approach, combining age-cohort-period and a specific gender analysis of the promotion to rank A. Overall, the data show that both the centre-wide policy and the institute—level culture play a role in how men and women are promoted to rank A.

Conclusion: The narrowing of the "male advantage" among researchers is a fact. It cannot be explained by a single factor. Both macro-level policies and department-level culture are involved. Nevertheless, explaining the narrowing gap in the first period requires another factor, which could be the increased female recruitment (even with a constant promotion rate, this factor would entail a narrowing gap). Additional data and regressions will be mobilized in the paper.

References:

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